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MEASUREMENTS

MEGACYCLE METER — MODEL 59-UHF

Operating INSTRUCTIONS

MEASUREMENTS CORPORATION
BOONTON NEW JERSEY

OPERATING INSTRUCTIONS

for

MEASUREMENTS MODEL 59 UHF MEGACYCLE METER

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BOONTON NEW JERSEY

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Additional information with regard to the applications and maintenance of this equipment will be available from time to time. Users of the Model 59 UHF Megacycle Meter are urged to discuss their problems with us and to suggest such modifications as might make the instrument more adaptable to their special requirements.

Maintenance difficulties should be reported to Measurements Corporation before proceeding with actual repairs, since, through our familiarity with the instrument we are able to suggest the appropriate repair procedure.

Engineering Department

MEASUREMENTS CORPORATION

Boonton, New Jersey

U. S. A.

Figure 1. Model 59 UHF Megacycle Meter

CHAPTER 1

INTRODUCTION

SECTION I. GENERAL

1. SCOPE OF MANUAL.

a. This manual describes the basic operation, construction and maintenance of the Model 59 UHF Megacycle Meter. Following the text of the manual are two appendices. Appendix I describes the recommended procedure for preparing the instrument for prolonged storage or re-shipment. Appendix II contains an Identification Table of Replaceable Parts, listing reference symbols, name and description, function and drawing number of each part required for maintenance.

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SECTION II. DESCRIPTION AND DATA

2. GENERAL

a. The Model 59 UHF Megacycle Meter, see Figure 1, consists of a compact oscillator connected to its power supply by a small flexible cord. It covers a frequency range of 420 to 940 megacycles and may be used as follows:

(1) As a grid dip meter.
(2) As a variable frequency oscillator, either modulated, or unmodulated.
(3) As an absorption wavemeter.
(4) As an oscillating detector, or as a tuned diode detector.

b. The octagonal case is functionally designed to provide a maximum of convenience in positioning the instrument. The bottom of this case contains a standard 1/4 - 20 tapped camera socket for tripod, or camera fixture, mounting. The hook on the bottom of this case fits the slot located on the top right-hand edge of the power supply.

3. TECHNICAL CHARACTERISTICS.

a. FREQUENCY CHARACTERISTICS:

(1) Continuously variable from 420 to 940 megacycles in one range.

b. FREQUENCY CALIBRATION:

(1) Each unit is individually calibrated every 10 megacycles to better than 2% accuracy. However, the accuracy obtainable under operating conditions depends on the technique of the user. This technique is described in Paragraph 20.

(2) The calibration is virtually linear over the entire frequency range.

c. MODULATION:

(1) CW or 120 cycles, or external modulation.

d. POWER SOURCE:

(1) 117 volts, 50-60 c.p.s.
(2) Power input 30 watts.

4. COMPONENTS SUPPLIED.

TABLE 1. TABLE OF COMPONENTS

Quan.	Description	Overall Dimensions			Unit Weight
		Height	Width	Depth	
1	Model 59 UHF Power Supply	7-7/8"	5-5/8"	8-1/2"	6-1/2#
1	Model 59 UHF Megacycle Meter Head	3-5/8"	4-5/8"	4-5/8"	1-3/4#
1	Tube, RTMA #0D3/VR-150, installed				
1	Tube, RTMA #5Y3GT, installed				
1	Tube, RTMA #0B2, installed				
1	Tube, RTMA #6AF4A, installed				

5. EXPORT PACKAGING.

a. Packed for export, the Model 59 UHF is crated in a wooden box.

TABLE II. EXPORT PACKAGING DATA

Number of Packages	Dimensions			Weight	Volume Cu. Ft.
	Height	Width	Depth		
1	18"	13"	19"	30#	2.6

IMPORTANT

Read Paragraph 21 entitled

GRID-DIP METER PHENOMENA IN THE UHF BAND

before using the Model 59 UHF

Megacycle Meters are available in the following ranges:

Model 59 LF 0.1 to 4.5 Megacycles
Model 59 2.2 to 420 Megacycles
Model 59 UHF 420 to 940 Megacycles

These oscillator heads plug into a common power supply.

CHAPTER 2

OPERATING INSTRUCTIONS

SECTION I. SERVICE UPON RECEIPT OF EQUIPMENT

6. UNPACKING.

a. Take care when unpacking or handling the equipment. Follow the procedure outlined below when unpacking the instrument.

(1) Place the packing case in a location where it can be opened easily.
(2) Follow the instructions for slitting the carton and removing the filler as printed on the label on the carton.

7. PRELIMINARY PRECAUTIONS.

a. Connect the Model 59 UHF oscillator unit to the power supply unit by inserting the plug at the end of the oscillator cable into the octal socket at the rear of the power supply.

b. If the Model 59 UHF oscillator unit has been ordered for use with any regular Model 59 power supply unit with a serial number under 4924, replace R-14 (5600 ohms, 1/2 watt) with a 5600 ohm 2 watt resistor. This resistor, R-14, is mounted on the DIODE-C.W.-MOD. switch. The change can be made easily by removing the knob, nut, and washer on the switch and by pulling the switch into the rear chamber of the power supply.

NOTE:

If R-14 is not replaced with a two watt resistor as recommended above, the existing 1/2 watt resistor may burn out when the instrument is used in the MOD position.

c. Connect the Model 59 UHF to a power source of 117 volts, 60 cycles.

SECTION II. CONTROLS AND INSTRUMENTS

8. POWER.

a. The POWER switch, S1, is located on the right-hand side of the front panel apron. This switch controls application of line voltage to the primary of the power transformer, T1.

b. The pilot light, E1, is located on the left-hand side of the front panel apron.

9. DIODE - C.W. - MOD.

a. The DIODE - C.W. - MOD switch, S2, is located at the top of the power supply unit near the handle.

b. In the DIODE position, the plate voltage is removed from V101 (6AF4) changing this tube from an oscillator to a diode detector. In this position the instrument may be used as an absorption wavemeter.

c. In the C.W. position plate voltage is applied to the oscillator V101 (6AF4). In this position the instrument may be used as a grid dip meter.

d. In the MOD position, the oscillator V101 (6AF4) is modulated by 120 cycles. External modulation of the oscillator may be used by connecting an external source at the MOD jack on the front panel.

10. GRID CURRENT METER.

The grid current meter, M1, indicates the relative grid current of the oscillator V101 (6AF4) in the C.W. or MOD position of S2. In the DIODE position, the meter indicates diode current.

11. SENSITIVITY CONTROL.

The SENSITIVITY control R6 on the front panel apron provides a means for adjusting the grid current for on-scale readings.

12. PHONES.

a. The PHONES jack is located on the front panel apron. Headphones may be used in the C.W. and MOD. position of S2 to obtain a beat between an oscillator of unknown frequency and the Model 59 UHF oscillator. When headphones are

used, the grid current meter, M1, is disconnected by the jack, J2.

13. TUNING.

a. The frequency tuning knob for Model 59 UHF is located on the oscillator head.

SECTION III. OPERATION

14. INSTALLATION AND ADJUSTMENT.

a. The Model 59 UHF Megacycle Meter requires no permanent installation.

b. The octagonal case is functionally designed to provide a maximum of convenience in positioning the instrument. The bottom of this case contains a standard 1/4 - 20 tapped camera socket for tripod, or camera fixture, mounting.

15. PRELIMINARY OPERATIONAL CHECKS.

a. Connect oscillator head to the power supply and the line cord to the power source as indicated in Paragraph 7.

b. Place the POWER switch, S1, in the up position. The pilot light will indicate that the power is applied. Allow one minute for the tubes to warm-up.

c. Place DIODE - C.W. - MOD. switch, S2, in C.W. position and adjust the SENSITIVITY control for a meter reading about mid-scale. The grid current should stay on scale as the tuning control is varied over the band. The unit is now ready for use as a grid dip meter.

d. Place DIODE - C.W. - MOD. switch, S2, in MOD position and adjust the SENSITIVITY control for an on-scale meter reading. The grid-current will vary over wider limits in the MOD. position than in the C.W. position. For grid dip application, therefore, the oscillator should be in the C.W. position. The MOD position, however, provides a convenient means for identifying the oscillator when it is used as a signal generator.

e. Place DIODE - C.W. - MOD. switch, S2, in DIODE position and adjust SENSITIVITY control for maximum meter reading. The oscillator head may now be coupled into an active circuit and tuned for maximum meter response. Under these conditions the unit operates as an absorption wavemeter.

16. OPERATION AS A GRID DIP OSCILLATOR.

a. Adjust controls as indicated in Paragraph 15c. Couple into passive circuit whose resonant frequency is to be determined. Tune over the frequency band until a dip occurs in the grid current indicating an absorption of oscillator energy. Back off on the coupling until a very small dip is obtained by tuning over the same general frequency range. Greater accuracy may be obtained by the use of loose coupling once the approximate frequency of the resonance has been established.

17. OPERATION AS A VARIABLE FREQUENCY OSCILLATOR.

a. Adjust controls as indicated in Paragraph 15c. Set to desired frequency by means of tuning knob. Couple circuit under test either inductively or capacitively.

18. OPERATION AS AN ABSORPTION WAVEMETER.

a. Adjust controls as indicated in Paragraph 15e. Couple into active circuit and tune megacycle meter for maximum meter response.

19. OPERATION WITH PHONES.

a. Phones can be plugged into the PHONE jack for indication of a dip. A sharp click accompanies the dip in grid current for conventional application.

b. If indication of frequency of an oscillator is required, the phones will permit use as an oscillating detector with its resultant zero beat method of accurate frequency determination.

c. As a non-oscillating diode detector (switch S2 on DIODE) for the identification of modulated signals, oscillator harmonics, sound of parasitics of blocking character, etc., Model 59 UHF will be found very useful.

20. COUPLING.

a. In general, the Model 59 UHF Megacycle Meter may be coupled to circuits using the same techniques as are employed with lower frequency grid dip oscillators. The coupling may be either inductive or capacitive, depending on the particular application.

b. For coupling at a low impedance point, inductive coupling is recommended (See Fig. 2a).

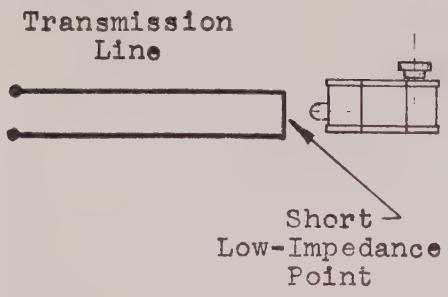


Fig. 2(a) Inductive Coupling

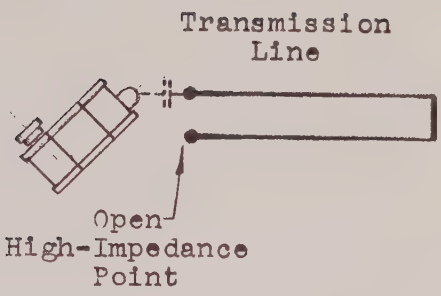
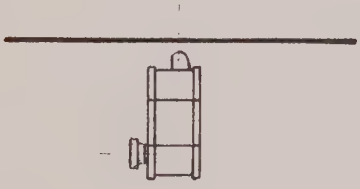
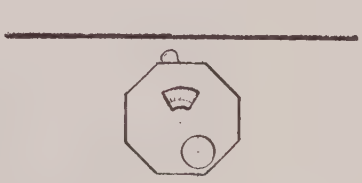


Fig. 2(b) Capacitive Coupling



Coil Orientation for
Maximum Inductive
Coupling

(a)



Coil Orientation for
Minimum Inductive
Coupling

(b)

Fig. 3 Inductive Coupling to a Length of Wire

c. For coupling to a high impedance point, capacitive coupling is recommended (See Fig. 2b).

d. To obtain maximum inductive coupling, the orientation of the Model 59 UHF coil is important. The orientations for maximum and minimum inductive coupling in a typical case are illustrated in Fig. 3.

e. For high-Q circuits sufficient capacitive coupling may be obtained by bringing the high-impedance point of the circuit in close proximity to the Model 59 UHF coil. The best coupling position may be found by experiment.

f. The greatest frequency accuracy of the Model 59 UHF can be obtained by proper use of the instrument. In general, if the coupling to the circuit under test is too close, the oscillator will be detuned or "pulled." To obtain the greatest accuracy, couple the Model 59 UHF tightly to the circuit under test for the initial search of a dip in grid current or zero beat. After the initial indication is obtained, decrease the coupling as much as practicable while still obtaining an indication.

21. GRID-DIP METER PHENOMENA IN THE UHF BAND.

a. Grid-Current Variation:

Some minor resonances or rapid grid current versus frequency variations may be noticed at a few discrete frequencies within the tuning range of the Model 59 UHF. These are due to internal resonances in the oscillator. Through careful design these resonances, or "suck-outs", have been minimized.

These spurious resonances are easily identified, since they are independent of the coupling distance to the circuit under test, while the depth of the desired resonances depends on the closeness of coupling to the measured circuit.

b. Optimum Coupling Distance:

In most cases it is desirable initially to couple very closely to the circuit under test. The plastic coil housing may be placed in direct contact with the circuit. After a resonance has been detected, the coupling distance should be increased.

It is highly desirable that the Model 59 UHF and the test circuit be held in fixed positions with respect to each other, because at 900 megacycles, for example, a variation in coupling distance of 1.3 inches is one-tenth of a wave length. Slight relative movements, therefore, "swamp out" grid current dips and make it extremely difficult to find a resonance.

It is desirable to tune very slowly in order not to overlook a sharp resonance. Many UHF circuits have a high Q and produce extremely sharp grid-current dips.

c. Dielectric Absorption:

Whenever possible, the circuit component under test should be kept away from lossy materials such as wooden or Masonite table tops, etc. These materials have high dielectric losses in the UHF band and will greatly reduce the Q of the circuit under test, or will load the grid-dip oscillator so heavily that resonances will not be distinguishable.

d. Radiation Phenomena:

Circuit elements to which the Model 59 UHF is coupled will often have dimensions which are a tenth of a wavelength, or longer, at the measuring frequency. These elements will, therefore, behave like antennas and they will radiate appreciable energy. If the person using the grid-dip meter moves any part of his body just a slight amount, the waves reflected from his body will react back on the grid-dipper with a resultant variation of grid current. This natural phenomenon may be mistaken for erratic behavior of the instrument. (This phenomenon is the same as that which is utilized in the proximity fuze). In order to prevent stray wave reflections from affecting the measurements, it is good practice to keep pieces of metal, instrument cases, etc., remote from the immediate measuring area.

A circuit element which behaves like an antenna and radiates an appreciable amount of electromagnetic energy has an equivalent radiation resistance which reduces the Q of the element. Such an element will exhibit a broad, poorly-defined, resonance when coupled to a grid-dip meter.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

SECTION I. MAINTENANCE

22. GENERAL.

a. Preventive maintenance procedure is not recommended for the Model 59 UHF. Preventive maintenance is a series of operations including inspection, adjustment, lubrication, etc., recommended periodically for certain types of equipment to eliminate the possibility of unexpected interruptions in service. Critical adjustments may be disturbed by too-frequent inspection by personnel unfamiliar with the design of the Model 59 UHF. This may result in maladjustments causing errors in data that would be much more serious than an occasional operational failure.

b. If failure occurs, the instrument should be checked by the procedure outlined in Paragraph 15 (Preliminary Operational Checks), and if trouble other than a defective tube is indicated, the instrument should be returned to Measurements Corporation.

c. If the seal on the instrument is broken without the permission of Measurements Corporation, the one-year guarantee will be void.

23. TUBE REPLACEMENT.

a. To replace tubes in Model 59 UHF head, remove knob, remove screw in sealed cup washer at center of cover, remove the screws located on the right and left edges of the top cover (do not disturb the screws above the name "MEGACYCLE METER"), and remove four screws holding side.

24. CIRCUIT FAILURE.

a. Most circuit failures will be evident from indications of the grid current meter, M1, and reference to the schematic diagram. Failure to oscillate may result if the unit is dropped. In this event, it is advisable to return the instrument to the factory for repair.

25. OPERATION OF REGULATOR TUBES.

a. Two voltage-regulator tubes are used in the Model 59 UHF Megacycle Meter. Voltage regulator V102 (OB2) is located in the Model 59 UHF head, while V2 (OD3/VR150) is located in the power supply. Only one of these tubes is ignited at any

one time. See Table III for the proper operation of the regulators.

TABLE III. REGULATOR OPERATION

S2 Position	Operating Regulator Tube
Diode	V2 (0D3/VR150)
C.W.	V102 (0B2)
MOD	V2 (0D3/VR150)

CHAPTER 4

EQUIPMENT USED IN CONJUNCTION WITH MODEL 59 UHF

SECTION I. ACCESSORIES

26. RECOMMENDED ACCESSORIES.

a. No special accesories are required.

b. It is recommended that a Measurements Corporation Model 111 Crystal Calibrator be employed for checking the frequency calibration of the Model 59 UHF.

CHAPTER 5

TECHNICAL SERVICE -- MAINTENANCE INSTRUCTIONS

SECTION I. GENERAL

27. SCOPE.

a. The purpose of this chapter is to acquaint operating and maintenance personnel with the theory of operation of the various circuits in the Model 59 UHF.

b. Return the instrument to Measurements Corporation whenever repairs involving replacement of components in the oscillator section are necessary.

c. If the seal on the instrument is broken without the permission of Measurements Corporation, the one-year guarantee will be void.

SECTION II. CONDENSED THEORY OF OPERATION

28. GENERAL.

a. The Model 59 UHF Megacycle Meter consists of two units - the oscillator head and the power supply unit.

29. POWER SUPPLY.

a. The power supply consists of a full wave rectifier with a voltage regulator tube V2 (0D3/VR 150) at the output of the filter consisting of R13, L1, C1, and C2. For C.W. operation the voltage regulator V102 (0B2) is connected across V2, and as a result the plate supply voltage to the oscillator unit is 105 volts, the regulated voltage of V102.

b. The meter M1 is connected in a bridge circuit consisting of R5, R6, and R7.

c. Internal modulation of 120 cycles is applied from pin 8 of V1 (5Y3GT) to the plate supply of V101 (6AF4) by means of C7, C8, and R14. Modulation in this manner is possible because the voltage across V102 (0B2) is too low to ignite this tube.

30. OSCILLATOR HEAD.

a. V101 (6AF4) is connected in a Colpitts type oscillator circuit with the interelectrode capacitance of the tube providing the feedback.

b. The oscillator is tuned by means of a split-stator type capacitor, C101 and C102.

c. V102 (0B2) stabilizes the plate supply voltage at 105 volts for the C.W. oscillator.

d. L101 is the tank inductance formed by the loop in the plastic housing. The oscillator is coupled to external circuits to be tested by means of L101.

SECTION III. TROUBLE LOCATION

31. LOCALIZING THE TROUBLE.

a. Trouble may be quickly localized by making the preliminary operational checks described in Paragraph 15.

b. To remove the case of the Model 59 UHF head, remove the tuning knob, remove the screw in the cup washer at center of cover and remove the screws located on the right and left edges of the top cover (do not disturb the screws above the name "MEGACYCLE METER"). Lift the cover off. To take one side off, remove the four screws holding the side in place. Further disassembly is not recommended.

32. REPLACEMENT OF V101 (6AF4).

a. When replacement of the oscillator tube V101 (6AF4) is necessary, remove cover and one side of the Model 59 UHF head in accordance with instructions of Paragraph 31b.

b. By trying a few 6AF4's the tube best suited to match the original dial calibration can be found. Minor adjustment in the calibration may be made by loosening the two screws holding the fiducial and rotating the fiducial slightly.

SECTION IV. PRE-ADJUSTMENT PROCEDURE

33. TEST EQUIPMENT REQUIRED.

a. The only test equipment required is that which is necessary for checking frequency calibration. A Model 111 Crystal Calibrator for checking each 10 megacycles point is recommended.

SECTION V. ADJUSTMENT PROCEDURES

34. GENERAL.

a. The only adjustment procedure recommended is that required for the replacement of V101 (6AF4). This procedure is explained in Paragraph 32.

APPENDIX I

1. STORAGE.

a. Remove dust from controls and outer surface of instrument with a clean rag.

b. Wrap instrument in heavy wrapping paper and seal seams with gummed tape or similar adhesive.

c. Store in a dry place. If excessive humidity is unavoidable, the wrapped instrument should be placed in a moisture-proof bag with a sufficient quantity of drying agent, such as silica gel, to insure a dry atmosphere.

(1) When the use of bag and desiccant is necessary, the instrument should be checked at 6-month intervals to determine the effectiveness of the seal.

2. SHIPMENT.

a. Wrap the instrument with heavy wrapping paper and seal s eams with gummed tape or similar adhesive.

b. Place in fibre-board carton or wooden box large enough to permit at least 3 inches of excelsior or similar packing material between the instrument and sides of the box.

(1) For export packing, the instrument must be wrapped in waterproof paper and the seams sealed with glue or similar sealing compound before being placed in a wooden box.

APPENDIX II
TABLE OF REPLACEABLE PARTS

A. MODEL 59 UHF OSCILLATOR

SYMBOL	DESCRIPTION	FUNCTION
C101	CAPACITOR: variable; not separately replaceable. Part of Meas. Corp. Dwg. H-4614.	Oscillator tuning capacitor.
C102	CAPACITOR: variable; not separately replaceable. Part of Meas. Corp. Dwg. H-4614.	Oscillator tuning capacitor.
C103	CAPACITOR: fixed; 13 mmf; not separately replaceable. Part of Meas. Corp. Dwg. H-4614.	Plate coupling to V101.
C104	CAPACITOR: Same as C103.	Grid coupling to V101.
C105	CAPACITOR: fixed; ceramic; 4.7 mmf ± 10%; 500 vdcw; 3/8" lg. x 3/16" dia.; two radial wire leads. Meas. Corp. Dwg. H-5372.	R.f. by-pass.
C106	CAPACITOR: fixed; ceramic; 1000 mmf, G.M.V. Meas. Corp. Dwg. H-6367.	R.f. filter, grid of V101.
C107	CAPACITOR: fixed; ceramic; 1000 mmf, G.M.V. Meas. Corp. Dwg. H-6367.	R.f. filter, filament of V101.
C108	CAPACITOR: fixed; ceramic; 1000 mmf, G.M.V. Meas. Corp. Dwg. H-6367.	R.f. filter, plate of V102.
E101	KNOB: round, fluted; black phenolic resin; 1-3/8" dia. x 11/16" h.; fits ¼" dia. shaft; two #8-32 set screws 90 deg. apart; brass insert. Meas. Corp. Dwg. H-2788.	Tuning knob.
L101	LOOP: 1/2 turn; .020 thk. x ¼ wide silver; 11/64 x ¼ x 7/8. Not separately replaceable. Meas. Corp. Dwg. H-4635.	Oscillator coil.
L102	COIL: r.f.; choke; single winding; two turns #28 AWG formex wire on fixed resistor; 150,000 ohms ± 10%; ½ watt; 3/8" lg. x 9/64" dia.; two axial wire leads. Meas. Corp. Dwg. H-4639.	R.f. filter, plate of V101.
L103	COIL: r.f.; choke; 15 turns close wound; 5/32" dia. x 7/16" lg.; two axial wire leads. Meas. Corp. Dwg. H-4636.	R.f. filter, filament of V101.

TABLE OF REPLACEABLE PARTS

A. MODEL 59 UHF OSCILLATOR

SYMBOL	DESCRIPTION	FUNCTION
L104	COIL: r.f.; same as L103.	Same as L103.
L105	COIL: r.f.; choke; 10 turns close wound; 1/8" dia. x 3/16" lg.; two radial wire leads. Meas. Corp. Dwg. H-4638.	R.f. filter, cathode of V101.
P101	CONNECTOR: octal plug; metal cap; ~~1-13/16" lg. x 1-1/4" dia.~~ BUSHING Meas. Corp. Dwg. ~~H-5379~~. H-5314	R.f. unit to power supply connection. Mates with J3.
R101	RESISTOR: fixed; composition; 470 ohms, ± 10%; 2 watts; 11/16" lg. x 5/16" dia.; two axial wire leads. Meas. Corp. Dwg. H-3734-471.	Plate dropping resistor, V102.
R102	RESISTOR: fixed; composition; 470 ohms, ± 10%; ½ watt; 3/8" lg. x 9/64" dia.; two axial wire leads. Meas. Corp. Dwg. H-3728-153.	Grid resistor, V101.
V101	TUBE: electron; triode; RETMA #6AF4A.	Oscillator tube.
V102	TUBE: electron; voltage regulator; RETMA #0B2.	Voltage regulator.
W101	CABLE ~~ASSEMBLY~~: special purpose; electrical; five conductors; flexible, cotton covered cable; approx. 5 ft. lg.; Meas. Corp. Dwg. H-886.	Provides connection between oscillator and power units.
XV101	SOCKET: electron tube; 7-pin miniature; not separately replaceable; part of Meas. Corp. Dwg. H-4614.	Holds V101.
XV102	SOCKET: electron tube; 7-pin miniature; seven spring beryllium copper, silver plated contacts; round ceramic body 27/32" dia. x 25/32" h. excluding terminals; one-piece saddle mtg. with shield; two mtg. holes 1/8" dia. on 7/8" ctrs. Meas. Corp. Dwg. ~~H-5374~~. H-5057	Holds V102.

TABLE OF REPLACEABLE PARTS

B. MODEL 59 POWER SUPPLY

SYMBOL	DESCRIPTION	FUNCTION
C1	CAPACITOR; fixed; electrolytic; two sections; 10 mfd, per section; 450 vdcw; metal case 2" lg. x 1" dia.; two positive terminals; case is common negative terminal. Measurements Corporation Part H-5310.	Power supply filter capacitor.
C2	CAPACITOR: Same as C1.	Same as C1.
C7	CAPACITOR: fixed; paper; 500,000 mmf. +20%-10%; 600 vdcw; 1-13/16" lg. x 1" w. x 1" h. Meas. Corp. Part H-5180.	A.f. coupling.
C8	CAPACITOR: Same as C7.	Same as C7.
E1	LAMP: incandescent; 6-8 volts, ¼ amp; bulb T 3¼ clear; 1-1/8" lg. o/a; miniature bayonet base; burn any position. Meas. Corp. Part H-5016.	Pilot lamp.
E2	KNOB: round; fluted; black phenolic resin; 1-1/8" dia. x 5/8" h.; fits ¼" dia. shaft; two #8-32 set screws; brass insert. Meas. Corp. Part H-2791.	Sensitivity control.
E3	KNOB: bar; black phenolic resin; 1¼" lg. x 3/4" w. x 5/8" h.; fits ¼" dia. shaft; one #8-32 set screw; brass insert. Meas. Corp. Part H-4133.	Function switch.
H1	HANDLE: 5/16" dia. brass rod, chromium plated; 4-5/16" lg. x 1-9/16" h.; one mtg. hole at each end; #8-32 x ½" d. on 4" ctrs. Meas. Corp. Part H-2024.	Power Supply carrying handle.
H2	FOOT: mounting; felt cushion; 13/16" dia. x ¼" h; threaded center post for mounting; 3/16" lg. x 6-32 thread. Meas. Corp. Part H-4204-2.	Power Supply supports.
I1	LIGHT: indicator; with lens for miniature bayonet base lamp; steel frame 1-23/32" lg. x 7/8" w. x 1-1/16" h.; mounts in single hole 11/16" dia.; red lens; smooth face; frosted back. Meas. Corp. Part H-5019.	Pilot light.
J1	JACK: telephone; for two-conductor plug; single break contact; mounts in single 3/8" dia. hole; Meas. Corp. Part H-5312.	MOD input connector.
J2	JACK: Same as J1.	PHONES connection.

TABLE OF REPLACEABLE PARTS

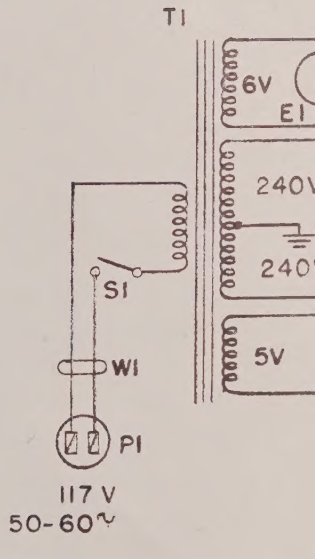
B. MODEL 59 POWER SUPPLY

SYMBOL	DESCRIPTION	FUNCTION
J3	CONNECTOR: receptacle; eight female contacts; phenolic resin with metal mtg. plate; mounts in 1-5/32" dia. hole with two mtg. holes 0.156" dia. on 1½" centers. Meas. Corp. Part H-5313.	Power supply to h.f. unit connection.
L1	REACTOR: filter choke; one section; 5 henries ± 10% at 40 ma. d.c.; 300 ohms d.c. resistance; 2-3/8" lg. x 1-3/8" w. x 1-3/8" h. o/a; two mtg. holes 5/32" dia. on 2" ctrs. Meas. Corp. Part H-5075.	Rectifier filter.
M1	METER: single arbitrary scale; GRID CURRENT, 0-100; 100 equal divisions; marked at every 20 divisions; black markings; white background; black pointer; 200 microampere movement; 400 ohms d.c. resistance; rectangular bakelite case; flange 4-17/64" w. x 31/32" h. x 45/64" d.; barrel 2-3/4" dia. x 1" d. behind mtg. surface; two stud terminals at back; four mtg. holes 5/32" dia. at 3-5/8" horizontal x 3-5/16" vertical ctrs. Meas. Corp. Part H-740.	Indicated relative grid current.
P1	CONNECTOR: plug; two male parallel blade contacts; integtal part of cable W1.	Power connector.
R2	RESISTOR: fixed; composition; 680 ohms ± 10%; 2 watts; 11/16" lg. x 5/16" dia.; insulated; two axial wire leads. Meas. Corp. Part H-3734-681.	Voltage divider, meter bucking circuit.
R3	RESISTOR: fixed; composition; 270,000 ohms ± 10%; ½ watt; 9/64" dia. x 3/8" lg; insulated; two axial wire leads. Meas. Corp. Part H-3728-274.	Same as R2.
R5	RESISTOR: fixed, composition; 33,000 ohms ± 10%; ½ watt; 9/64" dia. x 3/8" lg.; insulated; two axial wire leads. Meas. Corp. Part H-3728-333.	Same as R2.
R6	RESISTOR: variable; composition; one section; 10,000 ohms ± 20%; ¼ watt; C taper; three solder lug terminals; phenolic body; metal case; 15/16" dia. x ½" lg. extension; normal torque; no OFF position; mounted by 3/8"-32 bushing. Meas. Corp. Part H-5315.	Meter SENSITIVITY control
R7	RESISTOR: fixed, composition; 1000 ohms ± 10%; ½ watt; 9/64" dia. x 3/8" lg.; insulated; two axial wire leads. Measurements Corp. Part H-3728-102.	Part of meter bucking circuit.

B. MODEL 59 POWER SUPPLY

SYMBOL	DESCRIPTION	FUNCTION
R13	RESISTOR: fixed, wire wound; 1000 ohms ± 10%; 10 watts; vitreous enamel coating; 1-3/4" lg. x 3/8" dia; radial solder lug terminal each end. Meas. Corp. Part H-5118.	Current limiter, B supply filter.
R14	RESISTOR: fixed, composition; 5600 ohms ± 10%; 2 watt; 11/16" lg. x 5/16" dia.; insulated; two axial wire leads. Meas. Corp. Part H-3734-562.	Voltage dropping resistor, plate of oscillator tube.
S1	SWITCH: toggle; SPST; molded phonolic body; 1¼" lg. x 11/16" w. x 11/16" d.; ½" lg. ball tipped handle; locking action; back connected; two solder lug terminals; single hole mtg. bushing 15/32"-32 x 3/8" lg. Meas. Corp. Part H-383-1.	Power supply switch.
S2	SWITCH: rotary, three pole, three position; one pole not used; one section; phenolic wafer; brass silver plated contacts; non-shorting type contacts; 1-7/8" h. x 1-9/16" w. x 5/8" lg. from mtg. surface; 3/8"-32 x ¼" lg. bushing; round metal shaft ¼" dia. x 5/8" lg. from mtg. surface; shaft flatted for set screw. Meas. Corp. Part H-2140.	Power transformer.
T1	TRANSFORMER: power; plate and filament type; input 117 volts, 50-60 cycles; single phase; three output windings; Sec. #1, 240-0-240 volts at .020 amp. d.c.; Sec. #2, 5 volts at 2.0 amps; Sec. #3, 6 volts at 0.3 amps; shell type metal case 2½" w. x 3" lg. x 2-3/4" deep; two mtg. screws 8-32 thread on approx. 2¼" ctrs. Meas. Corp. Part H-2572.	Power transformer.
V1	TUBE: electron; duodiode; RETMA #5Y3GT.	Rectifier
V2	TUBE: electron; diode; RETMA #0D3/VR150.	Voltage Regulator.
W1	CABLE: power; electrical; two copper conductors, #18 AWG; rubber jacketed; rated 300 volts; 6 ft. lg.; one end terminated in P1; other end not terminated. Meas. Corp. Part H-704.	Power cord.
XV1	SOCKET: electron tube; octal; eight spring brass cadmium plated contacts; round plastic body 1-3/16" dia. x ½" h. excluding terminals; one-piece saddle mtg.; two mtg. holes 9/64" dia. on 1½" ctrs. Measurements Corp. Part H-5056.	Holds V1.
XV2	SOCKET: Same as XV1.	Holds V2.

K = 1000
UNLESS OTHERWIS
ALL RESISTORS
ALL CAPACITOR
○ = FRONT PANEL



B-4601-E

E SPECIFIED ;
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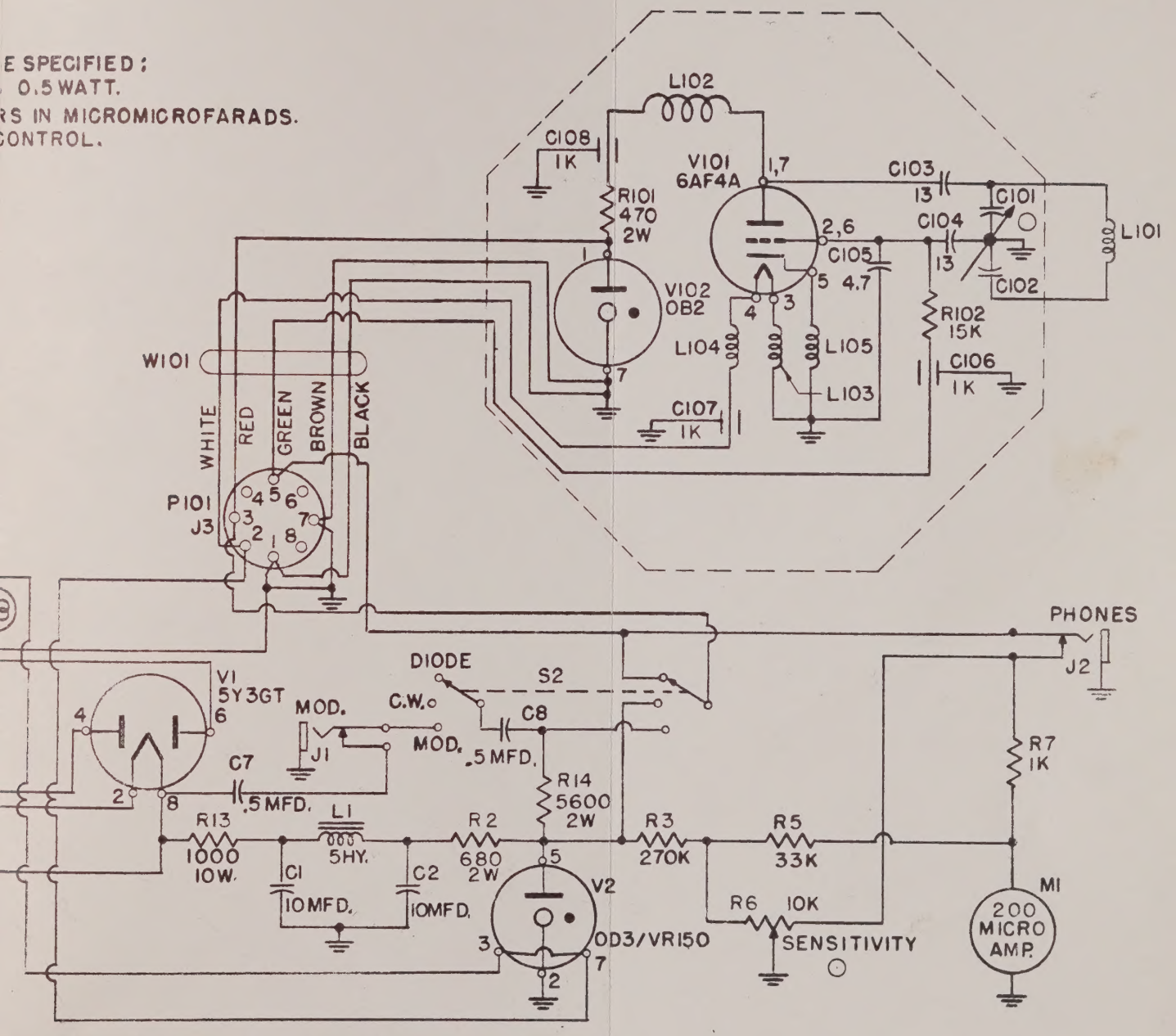
CONTROL.



SCHEMATIC DIAGRAM
MODEL 59 UHF

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